



# UNITED STATES PATENT AND TRADEMARK OFFICE


UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

m

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/705,027	11/02/2000	Hideshi Hattori	TJK/134	6830
26689	7590	01/07/2004	EXAMINER	
WILDMAN, HARROLD, ALLEN & DIXON 225 WEST WACKER DRIVE CHICAGO, IL 60606			PARKER, FREDERICK JOHN	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 01/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<p>Application No.</p> <p align="center">09/705,027</p>	<p>Applicant(s)</p> <p align="center">HATTORI, HIDESHI </p>	
	<p>Examiner</p> <p align="center">Frederick J. Parker</p>	<p>Art Unit</p> <p align="center">1762</p>	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 November 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 14-20 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21 and 22 is/are allowed.
- 6) ☒ Claim(s) 1-13, 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
     a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

***Response to Amendment***

1. The amendments in response to the 35 USC 102 rejections of the Previous Office Action are acknowledged and appreciated, and the Examiner withdraws the rejections due to said amendments. The following new rejections are necessitated by amendments.

***Claim Objections***

2. Claims 1,21 are objected to because of the following informalities: (1) claim 1, line 1, "Is" should be "is". (2) Claim 21, there are one or more words missing before "decomposition"" on line 7 1. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. An earnest attempt by the Examiner to find the thickness value of "at least equal to .04 micron" in the specification was unsuccessful. Applicants simply stated "Support....can be found throughout the originally filed application papers" which is non-specific. Applicants are reminded MPEP 608.01 requires citation of page and line citations for amendments. Since support was neither found nor cited, the limitation is considered New Matter.

*Claim Rejections - 35 USC 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-8,10,12-13 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Adair et al US 5504877.

Adair et al discloses a process of forming a particle-polymer composite by coating a substrate surface with a cationic polymer, followed by exposing the coating to a suspension of particles (e.g. diamond, a carbonaceous substance per claim 10) that are absorbed and packed throughout the coating (fig. 3, abstract) per claims 1,2,5. The polymeric coating is a polyelectrolyte(per claim 6), preferably polyethylene imine (inherently water soluble, and which is taught to be best suited for the process by Applicant's specification page 22, 12-19), and the polymer-coated substrate is immersed (per claim 5) in an aqueous suspension of diamond particles which adhere to the polymer as it contacts the water and swells (abstract; col. 4, 1-34). The polyelectrolyte polymers used by both reference and Applicant are the same and therefore would inherently possess the same swelling properties under the same conditions (Applicants admit swelling on

Art Unit: 1762

spec. Page 8, last paragraph to top of page 9). As to the limitation of a polymeric layer thickness "at least equal to 0.04 micron", Adair column 4, lines 45-54 teach thicknesses can be achieved from 0.1 micron or less to 100 microns in depth. Thus, the thickness range of Adair either anticipates, or in the alternate, is obvious over the range of Applicants' new limitation in claim 1 because the use of the thickness range of Adair et al would appear to be within Applicants' thickness range as claimed, and therefore its use would have been obvious to form the particle-polymer composite.

As to claim 3, Adair et al teaches use of a mask to form a patterned polymer coating on col. 2, 11-16.

Column 3, 25-27 teaches the substrate is metal, plastic, glass, or ceramic per claim 4.

Regarding claims 6-8, Adair et al teaches that the polyelectrolyte polymer coating carries a positive charge which is opposite the negatively charged diamond particles (col. 4, 1-12).

Regarding claims 12-13, Adair et al teaches the dispersion solvent used is water as is claimed, which inherently possesses a dielectric constant greater than 2 (col. 4, 21-29).

2. Claims 9,11,23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adair et al.

Adair et al is cited for the same reasons discussed above, which are incorporated herein.

Adair et al teaches on column 4, 21-26 that the diamond particles have a diameter of 0.1-10 microns and the particles make up 0.05-5 volume % of the dispersion, per claims 9 and 11. The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made if the overlapping portion of the particle sizes and volume make-up of

Art Unit: 1762

the dispersion disclosed by the reference were selected because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Wortheim* 191 USPQ 90.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the method of Adair et al using the disclosed ranges because they are demonstrated to be effective to form a particle-polymer composite.

As to claim 23, while the degree of swelling is not expressly discussed, since the materials of the polymeric polyelectrolyte layer are the same, and an aqueous suspension is used in both the claims and Adair et al, the time of immersion/ contact would have dictated the degree of inherent swelling, and one of ordinary skill would have determined the optimal time of immersion/ contact by routine experimentation to achieve a desired concentration of particles deposited and degree of adhesion, which are common and ordinary process variables which would have been within the purview of one of ordinary skill in the art. It therefore would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Adair et al by adjusting immersion/ contact time for the polyelectrolyte polymer layers and aqueous particle suspensions to optimize the properties of the final particle-coated article.

3. Claims 21-22 are allowable for the same reasons already on the record.

Art Unit: 1762

***Response to Remarks***

Applicants argue Adair does not meet the new thickness limitation (deemed above to be New Matter) of "at least equal to .04 micron", the limitation being included without citing column/line support. Instead Applicants refer to a non-related reference in their IDS which they claim is "a polymer film similar to Adair". This is both patently not persuasive and irrelevant. What another study did is not germane to the Adair et al reference because they are simply unrelated. An Applicant cannot pull data or conclusions from another, unrelated reference to dispute a valid patent reference to overcome that patent reference. Applicants arguments are not persuasive.

Applicants further argue that Adair washes away the polymer film. Where is this described? Column 4, 49-54 teaches rinsing "to remove any loose diamond particles" and further teaches that the layer may be dried rather than rinsed, rinsing therefore being an optional route. This argument is therefore not persuasive.

In view of the above rejections and the Examiners consideration of Applicants' remarks, the rejections are maintained.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after


Art Unit: 1762

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick J. Parker whose telephone number is 571/ 272-1426. The examiner can normally be reached on Mon-Thur. 6:15am -3:45pm, and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 571/272-1415. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703/308-0661.

  
Frederick J. Parker  
Primary Examiner  
Art Unit 1762

fjp